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*Standard Methods and Procedures (SMPs)  
for Control of  
**Sheep and Goat Pox (S & GP)**  
in the Greater Horn of Africa*





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***for Control of***  
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***in the Greater Horn of Africa***

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## Table of Contents

<b>Foreword</b>	<b>vi</b>
<b>1.0 Introduction</b>	<b>1</b>
1.1 Standard Method and Procedures (SMPs)	1
1.2 Sheep and Goat pox	1
<b>2.0 Definitions</b>	<b>3</b>
2.1 Surveillance and Epidemiology	3
2.2 Area Disease Status	4
2.3 Planning Documents	4
2.4 Personnel	5
<b>3.0 Surveillance and Epidemiology</b>	<b>7</b>
3.1 Case definition for sheep and goat pox– (Pox (nodular) syndrome complex)	7
3.2 Predisposing factors	7
3.3 Surveillance of S&G Pox according to disease status	8
3.4 Administrative preparations	8
<b>4.0 Sheep and Goat Pox Detection, Diagnosis and Vaccine</b>	<b>13</b>
4.1 Minimum pre-requisite in laboratory detection of sheep and goat pox	13
4.2 Field diagnosis, sample collection, transportation and storage	13
4.3 Sample testing	14
<b>5.0 Disease Control</b>	<b>17</b>
5.1 Disease control planning	17
5.2 Sheep and goat pox disease response	18
5.3 Sheep and goat pox prevention and control approaches depending on disease status	18
<b>6.0 Disease Reporting and Information Management</b>	<b>21</b>
<b>7.0 Sheep and Goat Pox and Trade</b>	<b>23</b>
<b>8.0 Risk Analysis and Risk Mapping</b>	<b>25</b>
8.1 Risk Analysis	25
8.2 Risk Mapping	25

## **Foreword**

The arid and semi-arid lands of the Horn of Africa (HOA) are home to poor and vulnerable populations, the majority of whom rely on livestock to sustain livelihoods. However, the performance of livestock in the region remains low, given the widespread occurrence of transboundary animal diseases (TADs) that are responsible for production losses, and reduced performance of intra- and inter-regional trade in livestock and livestock products. Because of disease outbreaks, live animal exports have been severely constrained during the past two decades, by bans imposed by importing countries to reduce risks associated with these diseases.

To address the negative impact of TADs on livestock trade, AU-IBAR and ICPALD together with the participating countries in the region, with financial support from the United States Agency for International Development (USAID), have developed a framework to support harmonization and coordination of the control of the diseases, referred to as the Standard Methods and Procedures (SMP) Approach. The SMP approach involves strengthening capacities of member states for surveillance, epidemiology, laboratory diagnostics, disease control programmes, and communications. The fundamental aspect of the approach is the linking of disease prevention and control activities in a country, to a set of regional minimum standards and procedures for TADs prevention and control in line with the World Organization for Animal Health (OIE) standards.

The minimum standards, procedures, methods and goals for a particular disease are contained in an individual SMPs. It deals with subject areas of surveillance, laboratory procedures and disease control, and states minimum standards, procedures and goals that must be met for harmonized regional control of a disease.

This booklet presents the SMPs for Sheep and Goat Pox (S&GP), and deals with the specific dynamics of S&GP prevention and control in the Greater Horn of Africa (GHOA).

The compilation of the materials in the SMPs for S&GP taking into consideration the characteristics of the Greater Horn of Africa, was made possible by technical experts from the region with technical support from AU-IBAR, FAO, OIE and AU-PANVAC. AU-IBAR is indebted to many scientists who reviewed the document and especially to Dr. James Wabacha the coordinator of the SMP-AH project for coordinating the preparation of the SMPs.

The SMPs for S&GP targets field veterinary personnel, policy makers, laboratory personnel and veterinary students in the region.

**Professor Ahmed El-Sawalhy**

**Director**

**African Union Inter-African Bureau for Animal Resources (AU-IBAR)**

## **1.0 Introduction**

### **1.1 Standard Method and Procedures (SMPs)**

The Standard Methods and Procedures (SMP) approach is designed to guide and harmonize the work of Departments of Veterinary Services (DVSs) in the Greater Horn of Africa (GHOA) region in their approach to the control of trade-related Transboundary Animal Diseases (TADS).

Standard Methods and Procedures are strategic protocols to create uniformity in animal disease detection and control procedures throughout the Greater Horn of Africa (GHOA). An individual SMP is a protocol for control of a given disease that outlines the measures that must be undertaken. The SMP deals with subject areas of surveillance, epidemiology, laboratory procedures, and disease control and states minimum standards, procedures, and goals that must be met for a harmonised regional control of a disease. It is supported with details as specified in Standard Operating Procedures (SOPS) for each subject area that are designed to fit the structure and capabilities of a given nation.

An SMP is a functional, action oriented document and is not intended to provide a detailed description of the disease. It is also a live and flexible document and can be changed as new science and new techniques for control are discovered

This SMP deals with the specific dynamics of sheep and goat pox (S&GP) and specifies standard, methods, and procedures for surveillance, diagnosis and control of the disease.

It provides the basis for coordination and harmonization of S&GP regulations and control in the region.

### **1.2. Sheep and Goat pox**

Sheep and Goat pox is endemic in most of the GHOA and has been reported in other areas of Africa, Middle East, Asia, and Europe. The morbidity rate in endemic areas is 70–90%, while the mortality rate is 5–10%, although it can approach 100% in naïve animals, especially the young ones born of un-immunized dams. It affects all breeds of domestic and wild sheep and goats. Transmission is usually by aerosols and close contact with severely affected animals with ulcerated papules on the skin and mucous membranes. The causal agents of sheep pox and goat pox is sheep pox virus (SPV) or goat-pox virus (GPV), two distinct but closely related members of the Capripox genus in the family Pox- viridae. The clinical signs and post-mortem lesions vary considerably with breed of host and strain of capripoxvirus. Indigenous breeds are less susceptible and frequently show only mild lesions, which could be confused with insect bites or

contagious pustular dermatitis.

The incubation period is 21 days according to OIE terrestrial animal health Code. Commonly, the disease may occur between 8 and 13 days following contact between an infected and susceptible animal. It may be as short as 4 days following mechanical transmission by insects. There is an initial fever, followed in 2–5 days by the development of papules which may be covered by fluid-filled vesicles. The typical signs include generalised papules or nodules in the mucous membranes of mouth, eyes and nose, fever, lacrimation, nasal discharge, laboured and noisy breathing.

At post mortem there are lung lesions with extensive pox lesions. The mediastinal lymph nodes are oedematous and enlarged. S&GP should not be confused with insect bites (urticaria), contagious pustular dermatitis (orf), blue tongue, PPR, photosensitization, dermatophilosis, parasitic pneumonia, caseous lymphadenitis and mange.

For the purpose of execution of this SMP, the sheep and goat pox disease status in the GHoA will be categorized into three main areas: Area of no known disease status; sheep and goat pox disease free areas, sheep and goat pox endemic area.

Contingency planning for control of sheep and goat pox is based on effective control of any outbreak of S&GP. It is important to develop capacity for surveillance especially Participatory Disease Search (PDS), risk analysis, information management and laboratory diagnosis in order to respond appropriately to any outbreak.

## **2.0 Definitions**

For common understanding of terminology, the following definitions will be used.

### **2.1. Surveillance and Epidemiology**

#### **Surveillance**

The systematic ongoing collection, collation, and analysis of information related to animal health and the timely dissemination of information so that action can be taken.

#### **Passive surveillance**

This is a method of surveillance that enables veterinary authorities to collect animal health data and information from disease-reporting stakeholders.

#### **Active surveillance**

This is a method of surveillance in which epidemiological information is collected through purposeful and planned interventions.

#### **Syndromic surveillance**

This is a surveillance approach based on observation of the main signs of disease.

#### **Clinical surveillance**

This is a surveillance approach to investigate the occurrence of diseases based on observations of clinical signs.

#### **Targeted surveillance**

A form of active surveillance based on probability of occurrence of disease in a given area and/or species.

#### **Risk-based surveillance**

A form of active surveillance that focuses on a certain area or livestock population based on perceived level of threat, risk and/or consequences.

#### **Participatory disease surveillance**

This is a form of active surveillance that uses participatory approaches in search of disease, including input from local livestock producers and others in the livestock value chain.

## **Epidemiological unit**

This is a group of animals with a defined relationship sharing common likelihoods of exposure to a disease.

## **Predisposing factors**

Predisposing factors are a variety of situations that harbor or promote disease.

## **Risk mapping**

A tool used for identification, assessment, communication and mitigation of a disease in a certain geographical area.

## **Zero reporting**

Periodic standard reports noting that surveillance in any form for a given disease has been carried out and no disease occurrence has been encountered. Zero reports are a valuable tool to indicate negative results of constant and ongoing passive and/or active surveillance.

## **2.2 Area Disease Status**

### **Area of no known disease status**

An area where the disease has never been reported

### **Disease free area**

A defined geographic area with no clinical signs of S&GP disease seen occurring or reported for the past three years without vaccination.

### **Endemic area**

Defined geographic area where S&GP is constantly present in susceptible animal populations.

## **2.3 Planning Documents**

### **Standard Operating Procedure (SOP)**

A plan of action for a particular undertaking that stipulates exact details of what must be done to accomplish the task.

### **Preparedness Plans**

Preparedness planning involves capacity building, equipment procurement, personnel responsibility allocation, and training in all the disciplines that support effective disease control, e.g. epidemiology, laboratory, disease management, etc

## **Rapid Response Plan**

Pre-programmed plan for immediate response to a report of an outbreak of a TAD or other emergency disease with the goal of eliminating the index case and preventing an epidemic spread. The Rapid Response Plan includes three components: the Epidemiology Section for disease investigation; the Laboratory Section for confirmation sampling; and the Disease Control Section for immediate disease control interventions as needed.

## **Contingency Plan**

An operational plan designed for immediate control of a disease outbreak, typically composed by the Department of Veterinary Services for use within that country.

### **2.4 Personnel**

#### **Veterinary Officer**

Government employed veterinarians and field staff.

#### **Veterinary Personnel**

All people associated with veterinary work including public veterinary staff (government at any administrative level) and private veterinarians and their staff members.



### **3.0 Surveillance and Epidemiology**

Strong programmes for surveillance, epidemiology, and laboratory diagnostics are necessary elements for sheep and goat pox disease control. It is essential to use a standardized case definition and to consider predisposing factors for surveillance and control of sheep and goat pox

#### **3.1 Case definition for sheep and goat pox– (Pox (nodular) syndrome complex)**

Sheep and goat pox is typified by generalized papules or nodules in the mucous membranes of mouth, eyes and nose, fever, lacrimation, nasal discharge, laboured and noisy breathing. In sheep it is also characterized by nodules around the perineum and udders.

Differential diagnoses include, insect bites (urticaria), contagious pustular dermatitis (orf), blue tongue, PPR, dermatophilosis, parasitic pneumonia, caseous lymphadenitis and mange. A tentative diagnosis of sheep and goat pox can be made based on clinical signs, but laboratory testing is required for confirmation and/or differential diagnosis as indicated in diagnostic section four of this document.

#### **3.2 Predisposing factors**

The following are the factors.

##### **3.2.1 Seasonality:**

Sheep and goat pox is more common in the rainy season or dry cold season. Weather-related seasonality and livestock mobility cause stress and can compromise immune response.

##### **3.2.2 Mobility:**

Livestock mobility favours contact between infected and susceptible herds.

##### **3.2.3 Naïve populations:**

The presence of naïve populations within an infected region is a major predisposing factor in epidemics.

##### **3.2.4 Malnutrition, parasitism, bacterial infections:**

These conditions aggravate clinical disease.

##### **3.2.5 Close contact:**

Direct transmission enables rapid spread of the virus in large groups of herding animals.

### **3.2.6 Unregulated trade and porous borders:**

These factors predispose spread of S&G Pox between neighbouring countries.

## **3.3 Surveillance of S&G Pox according to disease status**

### **3.3.1 Surveillance in areas of no known disease occurrence**

The aim here is to establish the epidemiological status of the population in the area. Continuous passive surveillance and active surveillance should be carried out as need be, and appropriate reactions to suspicious cases implemented.

### **3.3.2 Surveillance in disease free areas**

Surveillance aims at detecting as early as possible sheep and goat pox emergence or re-emergence and also demonstrating the absence of the disease or infection. Surveillance includes passive and active surveillance. Active surveillance includes syndromic surveillance, sero-surveillance and abattoir surveillance. For active surveillance, the approach is either targeted surveillance or risk-based surveillance based on the perceived risk factors such as neighboring to an infected area with or without disease.

### **3.3.3 Surveillance in endemic areas**

The aim of surveillance is to determine the level of occurrence and distribution of the disease in the area. It is also to provide data for use in risk analysis and targeted interventions.

The activities to be carried out include passive surveillance, and active surveillance. The active surveillance will include pathogen profiling, sero-surveillance, syndromic surveillance and abattoir surveillance in both endemic and epidemic situations.

## **3.4 Administrative preparations**

- a. Veterinary personnel working at all administrative levels must be trained on disease reporting using appropriate reporting, data management systems and feedback, e.g. ARIS 2 and other national systems.
- b. The veterinary Department itself should be equipped, at appropriate administrative levels, with necessary sample collection equipment, disease reporting tools and materials including standardized reporting formats, mobile phones, digital pens, etc.
- c. Undertake necessary capacity building to train and equip personnel at all levels.
- d. Provide policy or legal frame work supportive of surveillance.

### **3.4.1 Passive surveillance and passive surveillance field actions**

The principle in passive surveillance is to enhance early warning and prediction of possible outbreaks. Disease reporting and outbreak investigation of suspected cases is

essential. Reporting will be guided by the case definition. The reporting should be from the lowest veterinary jurisdiction or village to the higher level authorities. The process will include:

- a. Veterinary personnel undertaking routine animal health activities e.g. markets stock route inspection, vaccination campaigns, extension services, abattoir activities, etc. are expected to carry out syndromic surveillance during which they will inspect livestock for signs of clinical disease and collect data from livestock keepers;
- b. The national veterinary authorities will engage and sensitize livestock value-chain actors, including producers, traders and transporters, and abattoir workers to report any disease events encountered to the nearest animal health facility either public or private. This will include educational and informative materials on disease recognition and reporting and use of methods such as mobile phones, digital pens, pen and paper, radio programs, television programs, posters, information leaflets, community meetings, etc).
- c. In case of reports of suspected S&GP from the community, the responsible veterinary personnel, in collaboration with relevant ministries, will conduct outbreak investigation with sample collection and submission to the laboratory. The field staff may involve the Central Epidemiology Unit to delineate the outbreak;
- d. The responsible veterinary personnel will immediately report to the CVO and make a record in the standard reporting format;
- e. If a disease outbreak is confirmed, veterinary authorities shall institute appropriate control measures.

### **3.4.2 Active surveillance**

The purpose is to demonstrate the presence or absence of S&GP antibodies, pathogen and clinical disease in both infected and area without the disease.

Active Surveillance may involve one or more of the following activities: Sero-surveillance, syndromic surveillance; clinical surveillance; participatory disease surveillance and outbreak investigation of suspicious cases.

#### **3.4.2.1 Sero-surveillance field actions**

- a. Ensure that all necessary technical and logistical equipment is at hand;
- b. Use a pre-design survey protocol outlining sample size determination, sampling method, target population, sampling units and sampling frame taking into consideration livestock;
- c. Use pre-designed data collection tools, including, questionnaires for epidemiological interviews, forms, and data collection software;
- d. Mobilize survey teams composed of properly trained personnel;

- e. Develop a survey program together with the survey teams;
- f. Share the program with relevant stakeholders in targeted areas;
- g. Collect blood samples using appropriate tools and techniques such as Vacutainers, filter paper, microbleeders, syringes, etc.;
- h. Ensure proper environment and time for serum separation, and proper storage of sera;
- i. Ensure accurate labeling of samples, maintenance of test and identification of records, the sample cold-chain, and proper laboratory submission procedures;
- j. Data will be entered in the Central Epidemiology Unit database for analysis and reporting;
- k. If laboratory testing detects a positive sample, the responsible veterinary personnel should conduct an investigation;
- l. If a disease outbreak is confirmed, veterinary authorities should institute appropriate control measures;
- m. Sero-surveillance for sheep and goat pox can also be approached by the analysis of cryo-preserved sera for antibodies from previous active surveillance for other diseases in the target populations.

#### **3.4.2.2 Syndromic (clinical) Surveillance**

- a. Veterinary personnel undertaking routine animal health activities e.g. market stock route inspection, vaccination campaigns, extension services, abattoir activities, etc. are expected to carry out syndromic surveillance during which they will inspect livestock for signs of clinical disease and collect data from livestock keepers;
- b. Any disease syndrome characterized by pox like nodules and papules on the skin and mucous membranes
- c. If symptoms are encountered, the responsible veterinary personnel should immediately report to the CVO and an investigation carried out. A report will be made in the standard reporting format;
- d. If the symptoms are not encountered the reporting officer should file a zero report, indicating that sheep and goat pox was not found in the flock;
- e. Provide feedback to the relevant stakeholders.

#### **3.4.2.3 Abattoir surveillance**

Abattoir surveillance should focus on ante-mortem inspection.

#### **3.4.2.4 Participatory Disease Surveillance (PDS)**

The purpose of PDS is to identify disease cases early. PDS is a good tool to establish the disease history for “the pox syndrome” or the disease in an area. PDS is based on communication and transfer of indigenous knowledge for animal diseases, using a variety

of procedures. To implement PDS follow the actions below:

- a. Training (capacity building) of veterinary personnel on PDS technique;
- b. Relevant veterinary authorities should identify targeted risk areas and communities concerned;
- c. Prepare relevant checklists;
- d. Draw up a PDS program and share it with the target communities;
- e. Identify key contact people and if possible identify translators;
- f. Implement informal interviewing;
- g. Undertake ranking/ scoring, seasonal calendar, time lines, mapping and any other relevant tools in a participatory manner with the local communities;
- h. Undertake visualization of data to achieve a common understanding with the communities;
- i. Undertake data cross-checking by probing, triangulation and laboratory diagnosis for confirmation;
- j. Complement information so far collected with secondary information sources, direct observation and laboratory diagnosis;
- k. Submit a report to veterinary authorities;
- l. Share reports generated thereof promptly with the relevant stakeholders to enhance ownership.

#### **3.4.2.5 Outbreak investigation**

This will be undertaken immediately after the first index case has been confirmed in a population. In the event that positive sheep and goat pox test-results are received, the Veterinary Services will do the following:

- a. Mobilize the Rapid Response Teams (RRTs) from their bases to the affected areas;
- b. Use standardized sheep and goat pox outbreak investigation form. Sero-surveillance and abattoir surveillance to be done in order to determine the extent of the disease. It is worth noting that Sentinel herd surveillance will not be practical at this point because most of the herds in the area will be infected.
- c. Collect data and information on temporal and spatial distribution of S&G Pox outbreak, the species of animals affected and the numbers affected and dead;
- d. Sample will be collected, transported, stored and analyzed in the laboratory;
- e. Data will be entered in the central epidemiology unit database;
- f. Data will be analyzed and reports generated thereof;
- g. The reports generated thereof will be shared with the relevant stakeholders
- h. Notify the OIE and other organizations;
- h. Inform members of the public of the outbreak through appropriate media and gazettelement;

- i. Declare the end of S&G Pox outbreak when there is absence of clinical disease within 30 days from the last confirmed case in an area; quarantine restrictions will be lifted and members of the public advised accordingly.

## 4.0 **Sheep and Goat Pox Detection, Diagnosis and Vaccine**

These activities can be carried out at two levels depending on purpose:

- a. For national disease control programmes, the laboratory manager should use CVO/DVS approved tests based on OIE and the country's laboratory capacity.
- b. For livestock export trade and any other animals moving internationally, all laboratory testing must use OIE approved tests, or other tests as agreed to between importer and exporter.

### 4.1 **Minimum pre-requisite in laboratory detection of sheep and goat pox**

- a. All countries in the GHoA should have capacity to carry out basic diagnostic tests that can identify sheep and goat pox
- b. Laboratories should have standard operating procedures for biosecurity and biosafety on sample collection, handling, packaging, transportation and storage;
- c. Countries should create a schedule for participation in proficiency testing programmes to improve laboratory standards and harmonization;
- d. The basic assays which should be performed include, Fluorescent Antibody Tests (FAT), Agar gel immunodiffusion (AGID) Polymerase chain reaction (PCR) if available. Sheep and goats in export trade may be subjected to laboratory testing using OIE approved tests and protocols or according to the agreement between importers and exporters.

## 4.2 **Field diagnosis, sample collection, transportation and storage**

### 4.2.1 **Clinical diagnosis**

- a. Clinical signs suggestive of S&G pox are;
- b. Skin lesions include generalized papules or nodules in the perineal areas, parts of the body with less hair;
- c. Papules in the mucous membranes of mouth, eyes and nose;
- d. Other signs include, fever, lacrimation, muco-purulent nasal discharge, laboured and noisy breathing, enlargement of all superficial lymph nodes especially pre-scapular;
- e. Ruptured papules leave ulcerations.

### 4.2.2 **Post mortem examination**

Post mortem examination should look for the following signs:

- a. External lesions including severe and extensive pox lesions, focal and uniformly distributed throughout the skin and mucous membranes;
- b. Internal pox lesions mainly in the lungs and trachea;
- c. Enlargement and haemorrhages in the spleen and mediastinal lymph nodes;
- d. Congestion and oedema in the spleen, intestinal and rumen mucosa.

### 4.2.3 Sample Collection

Samples should be collected according to the expected laboratory assay to be performed but basically the following are required:

- In live animals:
  - » Skin scrapings, thick skin papule biopsies, scabs, aspirates of lymph nodes, vesicular fluids, whole blood (in anticoagulant) and serum;
- In dead animals:
  - » Samples include: skin lesions, lung lesions (including normal tissue), lymph nodes e.g. mediastinal lymph nodes and other organs with pox like lesions;
- For histopathology preserve the tissues in 10% formalin

### 4.2.4. Transport and Storage of samples

- a. Samples must be chilled and transported to the laboratory as soon as possible;
- b. If the samples delay, preserve in 10% glycerol/PBS or saline to preserve the sample;
- c. The samples must be kept cool at 4°C if stored for a few days or frozen at or below -20°C for a longer period;
- d. The containers must be watertight, robust and be closed in a way to avoid any possibility of leakage.

## 4.3 Sample testing

All laboratory procedures described in this SMP are as prescribed in the OIE Manual of diagnostics. Sample testing should be carried out in laboratories approved by the veterinary authorities. Sample testing should be carried out in laboratories approved by the veterinary authorities.

### 4.3.1 Antigen detection or virus isolation

#### 4.3.1.1 Identification of the agent.

Suitable diagnostic techniques for use in the GHOA region include:

- a. Virus isolation in cell culture (primary lamb testis or lamb kidney): the appearance of CPE may take 4–12 days, intracytoplasmic inclusions are clearly seen by haematoxylin and eosin staining, and antigen can be detected by immunoperoxidase;
- b. FAT though not available in all countries;
- c. AGID though not very specific due to cross reactions;
- d. PCR if available can be used to differentiate Capripox viruses (LSD, GPV and SPV);
- e. Histopathology and transmission electron microscopy provides a tentative diagnosis.

#### 4.3.1.2 Antibody detection tests

These are valid at herd level only. Suitable diagnostic techniques for use in the GHOA region include the following:

- a. VNT is the most specific serological test, but not sufficiently sensitive since immunity to capripox infection is predominantly cell mediated – individual infected animals may only produce undetectable low levels of neutralising antibody. It is, however, inappropriate test at herd level;
- b. Indirect Fluorescent Antibody Test - IFAT;
- c. Agar Gel Immunodiffusion test - AGID;
- d. Western Blot – use recombinant Protein 32 as antigen for this test.

Samples for virus isolation must be kept chilled and transported under refrigeration or on ice to the laboratory as soon as possible.



## 5.0 Disease Control

### Preamble

Prevention and control of sheep and goat pox is undertaken through vaccination, quarantine, movement controls, slaughter of infected and exposed animals and cleaning and disinfection of premises.

### 5.1 Disease control planning

Advance planning is critical for effective disease control operations. The following are three different planning necessities that must be designed within the framework of the SMP for sheep and goat pox.

#### 5.1.1 Preparedness planning

Preparedness planning outlines what a government needs to do before an outbreak of a disease in order to be prepared for it. This includes all things that stakeholders must do e.g. capacity building, equipment procurement, personnel responsibility allocation, and training in all the disciplines that support effective disease control, epidemiology, laboratory, disease management, etc.

#### 5.1.2 Contingency (rapid response) plan

Details what a government will do in the event of an incursion of a disease beginning from the point when a suspect case is reported. A pre-programmed plan for immediate response to a report of an outbreak of a TAD or other emergency disease with the goal of eliminating the index case and preventing an epidemic spread. It also refers to a response to an increase in prevalence of an endemic disease situation. The Rapid Response Plan includes three components: the Epidemiology Section for disease investigation; the Laboratory Section for confirmation and sampling; and the Disease Control Section for immediate disease control interventions if/as need be.

It is important that the epidemiology and disease control sections of veterinary departments fully cooperate with the disease control programmes in cases of disease outbreak. Pre-planning for index case response is critical so that time is not lost when an index case is reported; the following should be undertaken:

- a. Prepare kits with all equipment needed for effective rapid response to the index case;
- b. Coordinate plans between epi-surveillance, laboratory, and disease control sections;
- c. Ensure all needed equipment is identified and ready for action;
- d. Establish rapid response teams.

### **5.1.3 Recovery plan**

This is a plan for the safe recovery or restoration of normal activities, although possibly with procedures and practices modified in light of the experience gained during the outbreak.

## **5.2. Sheep and goat pox disease response**

### **5.2.1 Epidemiological Investigation**

This involves determination of the extent of the disease outbreak and delineation of the outbreak area based on surveillance and diagnostic information as described in surveillance section. (3.4.2.5, Outbreak investigation)

### **5.2.2. Movement Control and Quarantine**

The extensive pastoral production systems in GHoA and the inadequate enforcement of animal movement control in pastoral systems pose a challenge to sheep and goat pox control. However, the following measures need to be applied in case of sheep and goat pox outbreaks, when feasible and possible:

#### **5.2.2.1. Movement control**

Regulate movement for index flock and contact flocks by monitoring livestock movement control (checks posts, stock routes and border posts); control and regulate livestock markets in the infected and surrounding areas; any goats movement will be as directed by an authorized veterinary officer and a movement permit shall accompany moving animals; develop a harmonised regional policy enabling veterinary authorities to enforce movement control.

#### **5.2.2.2. Quarantine:**

Identify area to be quarantined; Apply quarantine measures as laboratory confirmation is awaited. Once sheep and goat pox is confirmed apply full quarantine in the identified area.

## **5.3 Sheep and goat pox prevention and control approaches depending on disease status**

### **5.3.1 Area of no known disease status**

Efforts in this area will be undertaken to determine the disease status and hence provide advice for control measures.

### **5.3.2 Disease free area**

Vaccinations for sheep and goat pox will not be carried out in this area. However, intense surveillance involving clinical examination and certification of goats in the area

will be undertaken. Goats and sheep movement to and from the area will be closely monitored by the authorized veterinary personnel.

### **5.3.3 Endemic Areas**

All goats and sheep over 6 months of age will be vaccinated bi-annually. Use only certified vaccines to control outbreak (AU-PANVAC); Records of all vaccinated livestock will be properly kept; Sero-monitoring shall be conducted on a randomly sampled population to confirm vaccination efficiency and vaccine efficacy. Further vaccination should be determined by the disease epidemiology and risk analysis. Mobilization of the community and awareness creation is required. Immediate notification of the diseases to OIE, AU-IBAR and RECs. Resource mobilization (financial and human)/operationalization of contingency plans; Permanent identification of vaccinated animals using approved official methods;

### **5.3.4 Epizootic Phase**

In case an area is declared infected as a result of confirmed sheep and goat pox outbreak in any one of the described diseases status areas, the following measures can be put in place: Mass vaccination in the infected area through ring vaccination. Markets closed in response to the outbreak.

#### **5.3.4.1 Movement Control and Quarantine**

The objective of movement control and quarantine is to minimize the spread of disease and to mitigate its spread. Both quarantine and movement control as disease control tools should be enhanced.

##### **5.3.4.1.1 Movement control**

Regulation of livestock movement is a routine activity and animals are only moved when their health status does not pose a risk to animals in their destination. Regulating movement of animals from an infected area to a disease free area protects clean sheep and goats but does not completely prevent spread of the disease. The pastoral production systems in GHoA and the inadequate enforcement of animal movement control pose a challenge to sheep and goat pox control.

Effective livestock movement control should among other focus on markets operations, checks posts, stock routes and border post management/controls. Any livestock movement will be as directed by an authorized veterinary officer and a movement permit shall accompany moving animals. Movement control can have adverse effects e.g. increased use of informal routes/trade if not well managed. Therefore communication with stakeholders and use of other strategies to limit spread disease is necessary.

### **5.3.4.1.2 Quarantine**

The application of quarantine is not very useful as it is difficult to enforce in pastoral systems

- a. Apply provisional quarantine as laboratory confirmation is awaited and lift the provisional quarantine if sheep and goat pox is not confirmed;
- b. Once sheep and goat pox is confirmed apply full quarantine in the identified area;
- c. Quarantine is imposed immediately the index case is identified;
- d. Regulate and control livestock markets;
- e. Stop livestock movement and enforce movement control;
- f. Create awareness and buy-in for the control measures;
- g. Conduct continuous surveillance to monitor new cases;
- h. Lift quarantine four weeks after the last case.

### **5.3.4.1.3 Treatment of sick animals**

It is recommended to provide supportive therapy to animals with clinical signs. Culling for immediate slaughter reduces the impact of the disease.

## **5.3.5 Vaccine and Vaccination**

### **5.3.5.1 Vaccine**

The commercially available sheep and goat pox vaccine in the region contains freeze dried live sheep and goat pox virus. Quality assurance should be undertaken by AU-PANVAC.

### **5.3.5.2 Vaccination**

In case of epizootic sheep and goat pox situations, vaccination has little value in affected herds. However, in stormy outbreaks, blanket and/or ring vaccination should be implemented.

## **6.0 Disease Reporting and Information Management**

All surveillance data collected goes immediately to the designated epidemiologist for analysis, in order to provide accurate advice for disease control decision makers.

Upon confirmation of first case, there should be an immediate notification to OIE, AU-IBAR and all Departments of Veterinary Services in the GHoA region.

Capacity building on information management is crucial to handle data emanating from surveillance, laboratory diagnosis and response activities. To realize this, countries in the region are advised to:

- a. Adopt common information management system such as ARIS-2 ;
- b. Strengthen the national disease notification system;
- c. Strengthen information sharing with other stakeholders within countries and in the region.



## 7.0. Sheep and Goat Pox and Trade

SGP is one of the trade sensitive diseases around the world. Livestock destined for export to Middle East, North Africa and other destinations shall pass through export quarantine stations as required by the importing countries, where all S&GP and other disease control requirements for importing nations will be met. Protocols for the quarantine stations are well defined and dealt with in the Standard Methods and Procedures for SMP for Quarantines in the IGAD Region. All testing protocols used should be in accordance with OIE standards.

Livestock destined for trade moving within the IGAD Regional Economic Community area or leaving the Eastern Africa region for other international destinations will be subject to quarantine and testing requirements of the importing nation.

In addition, the following are important considerations for trade between trading partners:

- a. Animals must not show clinical signs of S & GP on the day of shipment;
- b. Animals kept since birth, or for the past 21 days in establishment where no case of S & GP was officially reported during that period and that the establishment was not situated in S & GP infected area are to be considered as not infected or;
- c. Animals must be kept in quarantine station for the period of time required by the importing nation prior to shipment;
- d. Animals vaccinated against S & GP should be shipped not less than 15 days and not more than 4 months.
- e. Risk analysis in respect to sheep and goat pox for trade purposes has value in promoting trade;



## **8.0 Risk Analysis and Risk Mapping**

### **8.1 Risk Analysis**

The risk analysis paradigm includes four elements—hazard identification, risk assessment, risk management, and risk communication. Risk assessment is a scientifically based process of evaluating hazards and the likelihood of exposure to those hazards, and then estimating the resulting impact. The risk management phase involves using all of the information gathered during the assessment to evaluate policy options. Risk communication refers to communicating the results of the risk analysis

It is essential for the countries in the GHoA and the region to better understand the disease situation in order to implement appropriate disease control strategies that will progressively control Sheep and Goat Pox. In this regard, risk analysis is required to:

- a. Determine the risk of Sheep and Goat Pox introduction to a disease free area and to mitigate the risk due to Sheep and Goat Pox;
- b. To justify trade in livestock and livestock products
- c. Assess the impact of Sheep and Goat Pox.
- d. To communicate the result of risk analysis to relevant stakeholders to assist in the mitigation of S&G Pox

### **8.2 Risk Mapping**

Risk mapping is a critical tool that is used to create awareness and guide planning of disease surveillance and control. It is therefore important to understand the various risk factors that are important for the occurrence and distribution of S&G Pox in order to develop risk maps



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